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| Toxin A | |
|-------------------------------|-----------------|
| Glucosyltransferase Domain | Binding Domain |
| Active site DXD motif | Repeating units |

Fig. 1

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gatcctatag aatttaactt agtaactgga tggcaaacta tcaatggtaa aaaatattat tttgatataa atactggagc agctttaact agttataaaa ttattaatgg taaacacttt tattttaata atgatggtgt gatgcagttg ggagtattta aaggacctga tggatttgaa tattttgcac ctgccaatac tcaaaataat aacatagaag gtcaggctat agtttatcaa agtaaattct taactttgaa tggcaaaaaa tattattttg ataataactc aaaagcagtc actggatgga gaattattaa caatgagaaa tattacttta atcctaataa tgctattgct gcagtcggat tgcaagtaat tgacaataat aagtattatt tcaatcctga cactgctatc atctcaaaag gttggcagac tgttaatggt agtagatact actttgatac tgataccgct attgccttta atggttataa aactattgat ggtaaacact titatttiga tagigattgt gtagigaaaa taggtgtgtt tagtacctct aatggatttg aatattttgc acctgctaat acttataata ataacataga aggtcaggct atagtttatc aaagtaaatt cttaactttg aatggtaaaa aatattactt tgataataac tcaaaagcag ttaccggatg gcaaactatt gatagtaaaa aatattactt taatactaac actgctgaag cagctactgg atggcaaact attgatggta aaaaatatta ctttaatact aacactgctg aagcagctac tggatggcaa actattgatg gtaaaaaata ttactttaat actaacactg ctatagcttc aactggttat acaattatta atggtaaaca tttttatttt aatactgatg gtattatgca gataggagtg tttaaaggac ctaatggatt tgaatatttt gcacctgcta atacggatgc taacaacata gaaggtcaag ctatacttta ccaaaatgaa ttcttaactt tgaatggtaa aaaatattac tttggtagtg actcaaaagc agttactgga tggagaatta ttaacaataa gaaatattac tttaatccta ataatgctat tgctgcaatt catctatgca ctataaataa tgacaagtat tactttagtt atgatggaat tcttcaaaat ggatatatta ctattgaaag aaataatttc tattttgatg ctaataatga atctaaaatg gtaacaggag tatttaaagg acctaatgga tttgagtatt ttgcacctgc taatactcac aataataaca tagaaggtca ggctatagtt taccagaaca aattcttaac tttgaatggc aaaaaatatt attttgataa tgactcaaaa gcagttactg gatggcaaac cattgatggt aaaaaatatt actttaatct taacactgct gaagcagcta ctggatggca aactattgat ggtaaaaaat attactttaa tettaacaet getgaageag etaetggatg geaaactatt gatggtaaaa aatattactt taatactaac actttcatag cctcaactgg ttatacaagt attaatggta aacattttta ttttaatact gatggtatta tgcagatagg agtgtttaaa ggacctaatg gatttgaata ctttgcacct gctaatacgg atgctaacaa catagaaggt caagctatac tttaccaaaa taaattctta actttgaatg gtaaaaaata ttactttggt agtgactcaa aagcagttac cggactgcga actattgatg gtaaaaaata ttactttaat actaacactg ctgttgcagt tactggatgg caaactatta atggtaaaaa atactacttt aatactaaca cttctatagc ttcaactggt tatacaatta ttagtggtaa acatttttat tttaatactg atggtattat gcagatagga gtgtttaaag gacctgatgg atttgaatac tttgcacctg ctaatacaga tgctaacaat atagaaggtc aagctatacg ttatcaaaat agatteetat atttacatga caatatatat tattttggta ataattcaaa agcggctact ggttgggtaa ctattgatgg taatagatat tacttcgagc ctaatacagc tatgggtgcg aatggttata aaactattga taataaaaat ttttacttta gaaatggttt acctcagata ggagtgtta aagggtctaa tggatttgaa tactttgcac ctgctaatac ggatgctaac aatatagaag gtcaagctat acgttatcaa aatagattcc tacatttact tggaaaaata tattactttg gtaataattc aaaagcagtt actggatggc aaactattaa tggtaaagta tattacttta tgcctga

Fig. 2

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#4 #4 DPIEFNLVTGWQTINGKKYYFDINTGAALTSYKIINGKHFY FNNDGVMOLGVFKGPDGFEYFAPANTONNNIEGQAIVYOSK FLTLNGKKYYFDNNSKAVTGWRIINNEKYYFNPNNAIAAVG LOVIDNNKYYFNPDTAIISKGWQTVNGSRYYFDTDTAIAFN GYKTIDGKHFYFDSDCVVKIGVFSTSNGFEYFAPANTYNNN **IEGQAIVYQSKFLTLNGKKYYFDNNSKAVTGWQTIDSKKYY** FNTNTAEAATGWQTIDGKKYYFNTNTAEAATGWQTIDGKKY YFNTNTAIASTGYTIINGKHFYFNTDGIMOIGVFKGPNGFE YFAPANTDANNIEGQAILYQNEFLTLNGKKYYFGSDSKAVT GWRIINNKKYYFNPNNAIAAIHLCTINNDKYYFSYDGILQN GYITIERNNFYFDANNESKMVTGVFKGPNGFEYFAPANTHN NNIEGQAIVYQNKFLTLNGKKYYFDNDSKAVTGWQTIDGKK YYFNLNTAEAATGWQTIDGKKYYFNLNTAEAATGWQTIDGK KYYFNTNTFIASTGYTSINGKHFYFNTDGIMQIGVFKGPNG FEYFAPANTDANNIEGQAILYQNKFLTLNGKKYYFGSDSKA VTGLRTIDGKKYYFNTNTAVAVTGWQTINGKKYYFNTNTSI ASTGYTIISGKHFYFNTDGIMOIGVFKGPDGFEYFAPANTD ANNIEGQAIRYQNRFLYLHDNIYYFGNNSKAATGWVTIDGN RYYFEPNTAMGANGYKTIDNKNFYFRNGLPQIGVFKGSNGF EYFAPANTDANNIEQAIRYQNRFLHLLGKIYYFGNNSKAVT GGWOTINGKVYYFMPDTAMAAAGGLFEDGVIYFFGVDGVKA PGIYG*

Fig. 3

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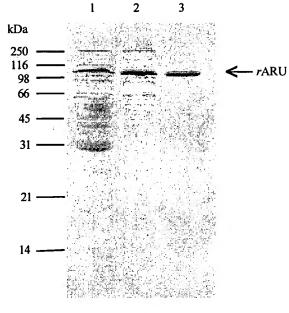


Fig. 5

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the day the first

Pneumococcus type 14

$$\alpha-D-Glcp$$

$$1$$

$$4$$
3)-\alpha-L-Rhap-(1\rightarrow2)-\alpha-Rhap-(1\rightarrow3)-\alpha-L-Rhap-(1\rightarrow3)-\beta-D-GlcpNAc-(1\rightarrow) (variably O-acetylated)

Shigella flexneri type 2a O-specific polysaccharide

8)-
$$\alpha$$
-D-NeupNAc)-2 \Rightarrow

Escherichia coli K1

Fig. 6

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